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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 11, 2007

Mr. Philip Allen
USEPA Region 6
Superfund Division (6SF-AP)
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Re: Star Lake Canal Federal Superfund Site, Port Neches, Texas
        Draft Tier 1 Remedial Investigation Report

Dear Mr. Allen:

The Texas Commission on Environmental Quality (TCEQ) received and has reviewed the above referenced document. Please find the enclosed comments for your consideration regarding the Remedial Investigation Work Plan.

Should you need additional information or wish to discuss this letter, please call me at (512) 239-5454 or you may contact me at my email address sschreie@tceq.state.tx.us.

Sincerely,

Sarah Schreier, Project Manager
Team 1, Environmental Cleanup Section II
Remediation Division

SS/hmw

Enclosures

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TCEQ Comments on
Draft Tier 1 Remedial Investigation Report
Star Lake Canal Superfund Site
Jefferson County, Texas
April 2007

General Comment

1. To document compliance with the Texas Professional Geoscience Act, pages containing geoscience work (e.g. cross-sections, potentiometric maps, iso-concentration maps, and boring logs) will need to be resubmitted with the seal of a professional geoscientist. Alternatively, a bound report can be submitted with only one seal for the entire report. For further information, see the Texas Board of Professional Geoscientists website (http://www.tbpg.state.tx.us). Please direct all questions regarding what constitutes geoscience to the Board (512/936-4400).

2. The TRRP rules represent a standard of control that could produce more stringent cleanup levels to address exposure scenarios that would not necessarily have been evaluated under the CERCLA process. In some cases, this may result in cleanup levels that are more stringent the levels developed under the CERCLA process. In other cases it may result in a cleanup value being developed for a media and/or location that the normal CERCLA process would not have developed cleanup values for at all. Two specific examples where this might occur include off-site property in industrial areas and groundwater bearing units that are not currently being used as a drinking water source. At the end of the Remedial Investigation, TCEQ needs sufficient data to allow an evaluation of whether or not the TRRP process would yield more stringent cleanup goals for any specific COC, media, and spatial location (depth and on or off-site). TCEQ also needs sufficient data to define the areas that need to be remediated should TRRP-derived cleanup goals prove to be more stringent. Many of the comments below that cite TRRP requirements are made to facilitate that eventual analysis.

3. Groundwater exposure pathways and potential groundwater impact from the site must be evaluated in future iterations of the remedial investigation.

p. 3, Tier 1 Human Health Risk Assessment (Tier 1 HHRA)

4. The Texas Risk Reduction Program rule is a promulgated rule and should not be listed as guidance. Please remove it from this list.

p. 4, 1.3.1, Site Description

5. Please note that the site includes all areas where contamination attributable to the site have come to be located and is not limited to the boundaries of the initial study area. Please clarify this in the text.

p. 9, Groundwater Corrective Action Monitoring, ARCADIS

6. Please note whether concentrations found in MW-22 and MW-22D exceed LHHCs.

p. 9, 1.4, Applicable or Relevant and Appropriate Requirements (ARARs)

7. Please include a discussion of action and location specific potential ARARs. Texas has specific requirements regarding the assessment of nature and extent of contamination at a hazardous waste site. These requirements can be found in 30 TAC 350 Subchapter C.

8. Please include a discussion of potential ARARs relevant to groundwater. Texas has requirements for the classification of groundwater bearing units and specific requirements regarding evaluation of nature and extent of contamination. Furthermore, there is a requirement that the groundwater pathway for human health exposure be evaluated as "complete or reasonably anticipated to be complete." These requirements are found in 30 TAC 350.

p. 16, 2.7.1, Natural Resources

9. A statement is made here that the shallow groundwater does not constitute a drinking water resource due to low transmissivities and variable water quality. Please provide the test results from both the A and B zones demonstrating that these are not Groundwater Bearing Units (GWBUs) as defined in 30 TAC 350.4 or documenting the GWBU Classification of each as described in 30 TAC 350.52 and clarified in the guidance document TRRP 8: Groundwater Classification.

p. 18, 3.0, Study Area Investigation

10. Please provide any photographic documentation of the sample collections procedures.

p. 19, 3.2, Areas of Investigation

11. Please provide the source for the definition of the term "Area of Investigation."

p. 22, 3.4.1, Sediment Sample Collection Procedures

12. Please discuss the levels of sample recovery that were achieved. Also, please discuss the maximum sample volume lost, and whether any samples were re-collected due to sample volume loss.

p. 35, 5.2 Surface Water Investigation Results

13. Please discuss whether any of the constituents that were detected in only one sample detected were above the LHHC.

14. Please provide the maximum observed concentrations of any constituents that were detected above the LHHCs.

p. 48, 6.2 Conceptual Site Model

15. Groundwater - The groundwater pathway for human health exposure needs to be evaluated as "complete or reasonably anticipated to be complete." Also, this report indicates that groundwater and surface water are in communication. Therefore, the groundwater migration to surface water exposure pathway should be evaluated as complete or potentially complete. Please revise the report accordingly, and remove the statement that "No potential pathway exists for human exposure to impacted groundwater at the site."

16. Canal Sediment – Please explain why human consumption of fish tissue is not a complete or potentially complete pathway.

17. p. 51, determination of LHHCs with regards to Soil, and groundwater – TRRP Assessment Levels, which are by default residential, should be used in place of Tier 1 industrial PCLs. Furthermore, Class 1 groundwater must be assumed until proven otherwise. Therefore, Soil PCL for the protection of class 1 groundwater must be considered.

18. p. 52, evaluate the exposure pathway for transfer of COCs from sediment to the tissue of finfish or shellfish within a water body, and human consumption of fish tissue as complete or potentially complete. TRRP-24: Determining PCLs for Surface Water and Sediment contains a methodology for calculating a protective concentration level for this exposure pathway. These values should be included in the comparison when selecting LHHCs for sediment.

19. Figure 21; please revise for consistency with any changes made in response to comments 15 through 18.

p. 87, 9.2, APAR Supplemental Groundwater Delineation

20. Clarify that the Site Wide Groundwater Monitor Program is for the Port Neches Huntsman Plant Corrective Action Site (SWR 30029).

21. Describe the collection methodology for "borehole water samples." Clarify whether these were literally taken from an open borehole or a temporary peizometer and whether it was collected via bailer or specify type of pump and flow rate (low flow or high flow?).

22. Please discuss whether borehole water samples were used for anything other than a qualitative decision on where to install temporary wells.

23. Please discuss whether temporary wells were used for anything other than a qualitative decision on where to install permanent wells.

p. 94, 10.0, Conclusions

24. Include a more detailed analysis of what data needs to be collected in the next phase of field work and what questions remain to be answered.

Please also see the attached comments provided by the Natural Resource Trustees and TCEQ Technical Support Section regarding the review of this document.

Texas Commission on Environmental Quality
INTEROFFICE MEMORANDUM

To: Sarah Schreier, Project Manager;   **Date:**   May 31, 2007
Environmental Cleanup Section I,
Remediation Division

From: Larry Champagne; Technical Support Section, Remediation Division

Subject: Star Lake Canal NPL Superfund Site
Draft Tier 1 Remedial Investigation Report

The Natural Resource Trustees and I have completed our review of the subject document for this site and have the following comments, some of which were previously made during the review of the RI Work Plan. Although the Response to Comments indicated that the work plan would be revised to address these concerns, no evidence of those revisions appears in this RI.

General Comments:

1.   The prioritization of sources of ecological benchmarks is a concern. It is important that for the protection of aquatic life that the criteria listed in the Texas Surface Water Quality Standards (TSWQS, 30 TAC §307) be used as the primary source as these are state law. The National Ambient Water Quality Criteria (NAWQC) can then be used to supplement the TSWQS where there are no values for particular COPECs or where the NAWQC are more stringent. In addition, for all media, it is preferred that TCEQ benchmarks be used primarily as these values have been peer-reviewed by the multi-stakeholder Ecological Workgroup. Finally, the most recent version of the TCEQ benchmarks should be utilized and all references to the use of these ecological benchmarks should be to TCEQ (2006).

2.   The SLERA should address the potential for cumulative effects for those COPECs with a similar mode of toxicity, such as a narcotic effect for polycyclic aromatic hydrocarbons (PAHs). Although this is considered for PAHs in sediments, this potential for cumulative effects needs to be considered for each such COPEC for all media (i.e., sediment, soil and surface water) and each receptor type (wildlife, aquatic life and benthic invertebrates). We acknowledge that a methodology may not be available to evaluate each scenario; however, these situations can be addressed in the uncertainty analysis. We do note the following: polychlorinated biphenyls (PCBs) were evaluated in the SLERA on an Aroclor-only basis, such that exposure to Total PCBs was not considered; wildlife exposure to PAHs in sediment and soil was evaluated on an individual PAH basis rather than a total or grouping into high and low molecular weight PAHs; and that Di Toro et al.

(2000) provides chronic values to evaluate aquatic life using the narcosis model for PAHs.

3.   The document includes multiple statements regarding ecological risk becoming acceptable or minimal if more reasonable exposure point concentrations would have been used. These are premature statements and should be omitted. The BERA will show whether or not risk is minimal under less conservative assumptions.

4.   Contrary to the July 10, 2006 Response to Comments on the Revised RI Work Plan, the document still does not address the previously identified issue of using habitat suitability criteria as the basis for inclusion of threatened and endangered (T&E) species in the evaluation of potential receptor species. Text indicating the observed occurrence of T&E species as the criterion for inclusion was not revised (e.g., Section 8.2.4) and is in conflict with the previously submitted comment that receptor species should not be chosen based on this criterion. Since T&E species are rare, thus justifying their listing, lack of field observation of said species is insufficient justification to omit protected species that may occur from evaluation in the SLERA. Additionally, the Brown Pelican still has not been added as a potential receptor as previously agreed.

5.   We seem to recall that in the early 1980s, EPA found high levels of dioxin in samples from the site area; however, dioxin does not appear on the list of analytes. Please explain this omission or analyze the next round of soil and sediment samples for dioxin.

Specific Comments:

1.   P. 2-3, Section 1.2 Objective: Please remove "EPA" from the last line on P. 2, correct the date of the TNRCC guidance to 2001, and add a reference to TCEQ (2006).

2.   P. 10, Section 1.4 ARARs: As indicated in the general comment, in addition to the state-adopted surface water quality standards, TCEQ (2006) contains a compendium and a hierarchy of peer-reviewed ecological benchmarks, including the sources listed here. Therefore, it is preferred that TCEQ (2006) be identified as the main source of ecological benchmarks in this SLERA.

3.   P. 34, Section 5.0 Nature and Extent of Impact: As the data is presented, it is difficult to efficiently gauge attainment of the RIs purpose (Section 1.1) to "Initially characterize the nature and extent of constituents at the Site". Text lacks a thoughtful discussion of the investigation results as to the extent of COPECs in environmental media in relation to their source areas and subsequent fate and transport, specifically the ability of the collected data to adequately characterize potential risk. Without a clear statement of the extent determination requirements (e.g., risk-based levels) and supporting discussion of

the data, we are unable to concur that the purpose of the Tier 1 RI has been achieved. These issues are relevant to the scoping of the Tier 2 RI and to exposure area assumptions for ecological receptors that are expected to be incorporated into the BERA. We note that Tables 4 through 11 provide a column indicating the human health criteria relevant to the environmental media presented in the tables. It would be helpful if the tables could include relevant ecological benchmarks as well. We also note that Figure 22 shows the locations of COPECs exceeding human health levels, but there does not appear to be an equivalent data presentation based on ecological receptors. Perhaps this is based on the relatively high number of such COPECs; however, such an understanding is important to the transparency of the SLERA and in evaluating attainment of the extent determination requirements from an ecological perspective.

4.   P. 48, Section 6.2 Conceptual Site Model: The sediment-to-fish pathway also needs to be evaluated for wetland sediment. Furthermore, Figure 21 should be revised to reflect fish and benthic invertebrates as receptors and include their exposures. Currently, these organisms are only listed as dietary items for humans and other ecological receptors.

5.   P. 60, Section 8.2.2 Ecological Benchmarks: Please see the related general and specific comments on the preferred use of TCEQ (2006) as the main source of ecological benchmarks. As such, TCEQ (2006) should be identified as the main source for all tables that list benchmarks (e.g., Tables 18a through 18e). Where a TCEQ value is not available, the alternate specific source should be identified in these tables to allow the reader to understand the precise source for each benchmark used in the SLERA. We note that although water benchmarks are attributed to National Ambient Water Quality Criteria or TCEQ ecological benchmarks, we are unable to verify these as the sources for benchmarks used in the SLERA, particularly for PAHs.

6.   P. 61, Section 8.2.3 Selection of COPECs: Although bioaccumulation is identified here as one of the selection criteria, it cannot be determined from the text or tables which contaminants were retained on this basis. See also the related specific comments regarding COPEC retention.

7.   P. 62, Section 8.2.4 Selection of Ecological Receptors, 4th bullet: The presence of T&E species does not need to be confirmed at the site in order to justify the evaluation of a surrogate species. Unless a convincing discussion is made that habitat requirements cannot be met, the potential of occurrence is sufficient to warrant an evaluation. Revise the 4th bullet so it reads "the ROCs must reflect state or federally listed T&E species if their occurrence was confirmed at the site or potential habitat for the species exists on the site." Please also ensure that all potentially occurring T&E species are evaluated directly or via a surrogate receptor.

8.   P. 63, Section 8.2.4 Selection of Ecological Receptors: We resubmit the following comments which this document has still not addressed, despite indications otherwise:

A) *The characterization of the muskrat exposure in the text is incorrect. Muskrats are primarily aquatic animals, burrowing into the sediments of marshes or river banks or shorelines. They feed primarily on aquatic vegetation. Therefore they will be exposed to contaminants primarily through aquatic vegetation, surface water and sediments, not soil as the report indicated.* Further, we are unable to determine from Table 19 the intended use of soil and sediment data when determining the total dose for the muskrat. Please revise accordingly.

B) *It is unlikely much information will be available to estimate risk to the white-faced ibis, therefore we suggest using a surrogate species. The RI Work Plan should indicate which surrogate species will be used, and should discuss using conservative assumptions (NOAELs) for the selected surrogate.*

9.   P. 63-64, Section 8.2.4 Selection of Ecological Receptors, Figure 21 Conceptual Site Model, and Figure 26 Food Web Diagram: The soil-to-mammal exposure pathway is identified as complete, but is not being evaluated. As stated in previous comments on the work plan, high percentages of incidental soil ingestion by raccoons and other mammals could be a significant part of the exposure, particularly if these soils (having originated from dredged sediments) house the highest COPEC concentrations. Swamp rabbits, marsh rice rats, robins, and red-tailed hawks should also be evaluated as ROCs. Site observations by Trustee representatives indicate that there is sufficient upland habitat to support these receptors. There is also disagreement with the text (P. 65) and Figure 21 regarding exposure of shorebirds to constituents in bank soil. Please revise the figure to show that this pathway is complete and will be evaluated. The sandpiper has been observed at the site and should be evaluated as a ROC because of its high percentage of sediment ingestion (i.e., 18%). Finally, reptiles and amphibians need to be qualitatively evaluated and addressed in Section 8.5 Uncertainty Assessment.

10.   P. 66, Section 8.3.2 Exposure Factors: The assumption of a bioaccumulation factor (BAF) of 1 to predict all prey tissue COPEC concentrations is not necessarily conservative depending upon the characteristics of the COPEC (e.g., pesticides and phthalates). For those COPECs proposed for elimination from further evaluation within the SLERA, this assumption should be supported with an evaluation of their bioaccumulation potential. An appropriate place for this discussion may be the Uncertainty Assessment.

11.   P. 67, Section 8.3.3 Total Daily Dose: It would be beneficial to provide the calculated daily dose and toxicity reference value within Table 21 in order to evaluate the significance of various exposure assumptions relative to the TRVs used. For instance, it

is unclear why the Belted Kingfisher consistently has the highest Hazard Quotients when comparing its exposure assumptions to those of other receptors of concern.

12.   P. 70, Section 8.4.1 Hazard Quotients (Evaluation of PAHs): Text indicates that PAHs in sediment will be evaluated using guidance provided in USEPA (2003). Please verify this citation as USEPA (2003) is listed in Section 12 (References) as a soil screening values document. Also, reference to USEPA (2000c; Page 60) concerns PAH mixtures in sediment but its relationship to the more recent document (i.e., USEPA. 2003. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. U.S. Environmental Protection Agency, Office of Research and Development, Washington, DC. EPA/600/R-02/013) is unclear and possibly a typographical error. Please clarify which document is intended for use, although in these comments we assume it is USEPA (2003) as cited herein.

There is confusion over the analytical program of the RI and its application to USEPA (2003). Table 3 – List of Constituents Analyzed in the Tier 1 Remedial Investigation, lists 34 PAHs, but SLERA sediment data tables list results for 16 PAHs. Please clarify. As the SLERA text acknowledges, USEPA (2003) is based on data availability for 34 specified PAHs; although guidance is provided for situations that lack such analysis. SLERA text indicates that the raw summed toxicity units were corrected by multiplying by 2.75 in order to estimate toxicity associated with all 34 PAHs, essentially ensuring the corrected sum toxic units will fall within the 95% confidence limits of those measured using 34 PAHs. Our review of Table 6-1 from USEPA (2003) indicates a correction factor of 2.75 would be applied to a data set of 13 PAHs in order to gain a 50% confidence level. Although a correction factor is not provided for a data set of 16 PAHs, it seems one for a 95% confidence level would be closer to 11.5 than to 2.75. It is necessary for the SLERA to provide detailed explanation and justification for professional judgments. It is also worth noting that USEPA (2003) highly recommends development of site-specific uncertainty (correction) factors for situations where existing data is limited to 13 or 23 measured PAHs.

Use of USEPA (2003) represents an alternate approach to evaluating potential risks to benthic invertebrates based on the chemical line of evidence. We believe it is appropriate to also evaluate these receptors using the TCEQ's total PAH benchmark approach (i.e., comparison of site data to first effects level and the mid-point level between the first and second effects levels (TCEQ, 2001 and update of 2006). In addition, the SLERA should: specifically discuss and compare the U.S. EPA approach and the TCEQ approach in terms of protectiveness and appropriateness for the site in question; due to the relatively shallow water in some aquatic areas, consider the protectiveness of both approaches considering that site sediments could be exposed to UV light; consider the presence of any additional narcotic compounds in sediment; explain how non-detected values will be

addressed; and consider that the approach outlined in USEPA (2003) is not necessarily intended to be protective of organisms that ingest contaminated sediment.

Lastly, text does not describe the approach used to apply the organic carbon data to the evaluation of PAH mixtures, so it is unclear which data were applied to gain the results provided in Tables 22 and 23.

13.   P. 77, Section 8.4.1 Hazard Quotients (Evaluation of Aroclor): It is common practice for risk from exposure to polychlorinated biphenyls (PCBs) to be evaluated based on a Total PCB concentration to consider the similar toxic mechanism of the various Aroclors. It is unclear why the SLERA developed HQs for individual Aroclors. In addition, Aroclor analysis is a poor analytical method to evaluate weathered PCBs. With the confirmation of their presence in Tier 1, Tier 2 sampling should consider this issue.

14.   P. 80, Section 8.4.1.3 Fresh Surface Water: It would be beneficial for the SLERA to specifically list and/or graphically display on a figure, those water and sediment sample locations to be evaluated as freshwater and marine.

15.   P. 82, Section 8.6 Summary and Conclusions: The document should clearly identify which COPECs for which media are retained for further evaluation and the basis for their retention, such as due to Hazard Ratios (e.g., aquatic life and benthic community) and/or Hazard Quotients (e.g., wildlife) or bioaccumulation. These distinctions are relevant to the scope and design of the Tier 2 RI.

16.   P. 83, Section 8.6.1 Sediment: The reference to USEPA, 1998 needs clarification as Section 12 (References) provides citations for USEPA, 1998a, b, c and d. Further, use of a geometric mean acceptable toxicant concentration for evaluating ecological risk should be reserved for the BERA and only after its use has been well-justified.

17.   Table 19, Exposure Factors Used in the SLERA and Figure 26, Food Web Diagram: As the Mallard is a dabbler ingesting organic and inorganic sediment, the %soil/sediment in the diet listed in the table should be increased to 5%. Also, if the White-faced Ibis remains as a ROC, changing the diet composition to truly reflect its aquatic nature is necessary. Most bird references state that aquatic insects, larval insects and crustaceans make up a large portion of its diet. Contrary to the figure, the table seems to indicate they eat terrestrial insects only. When the diet is modeled for the ibis or its surrogate, both aquatic and benthic invertebrates should be used in order to capture exposure from sediment/invertebrate ingestion. Similarly for the Marsh Wren, the figure indicates that it eats only terrestrial insects when in fact it also eats emergent aquatic insects.

18.   Figures 18A and 18B, Summary of Detections in Molasses Bayou Sediment Samples: These figures indicate individual PAH concentrations at locations representing the main

stem of Molasses Bayou (e.g., MB-10, MB-14, MB-18, MB-21 and MB-24) are generally several orders of magnitude greater than other samples within the Molasses Bayou sampling area. These data indicate the potential need to further characterize this area and consider it as a separate exposure area within the BERA due to the expected differences or density in the aquatic assemblages present and the significantly higher COPEC concentrations.

19. Appendix H, NOAEL Based TRVs: For high molecular weight PAHs text indicates that an avian TRV was not available; however, HQs are provided in Table 21 for this COPEC/receptor pair. Please explain.

Citations:

Di Toro DM, McGrath JA, Hansen DJ. 2000. Technical basis for narcotic chemicals and polycyclic aromatic hydrocarbon criteria. I. Water and tissue. Environ Toxicol Chem. 19:1971-1982.

TCEQ. 2001. Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas. December. Texas Commission on Environmental Quality. RG-263 (revised).

TCEQ. 2006. Update to Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas RG-263 (Revised). January 2006 Version.

U.S. EPA. 2003. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. U.S. Environmental Protection Agency, Office of Research and Development, Washington, DC. EPA/600/R-02/013.